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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/982,383

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10/03/2005

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EXAMINER

KIM, KEVIN

ART UNIT

PAPER NUMBER

2638

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action SummaryApplication No. **09/982,383**Applicant(s) **KUMAR ET AL.**

Examiner

Kevin Y. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-9 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 4 is/are rejected.
- 7) ☒ Claim(s) 2,5,6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed July 7, 2005, with respect to the rejection(s) of claim(s) under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a newly found reference, as set forth below.

2. Claims 1,3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marko et al (US 6,823,169) in view of Kost et al (US 6,081,215, previously cited).

Claim 1.

Marko et al discloses a system, see Fig.5, comprising;

a complex mixer (216,218) for quadrature demodulation of an wideband IF input signal into a complex signal,

a sampler and converter, i.e., A/D converter (224,226), for converting the complex signal into sampled digital complex signals and

a clock generator (not shown but is required to provide a sampling clock signal to the A/D converter).

The claimed invention further differs from Marko et al in that it uses a bank of samplers and a bank of converters, and a polyphase clock generator to provide sampling clocks to the plurality of samplers in a phase-staggered manner. Referring to Fig.4, Kost et al teaches a bank of low-rate A/D converters (48,50) and a polyphase clock generator (70) providing sampling clocks (71,73) of staggered phases to the A/D converters for the purpose of to overcome the shortcomings of a single A/D converter such as large power consumption and non-linearity when

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wide bandwidth signal is to be sample. See col. 1, lines 41-43. Note that the complex signal demodulated by the complex mixer in Marko et al's system has a wide bandwidth. See col. 5, lines 46-47. Thus, it would have been obvious to one skilled in the art at the time the invention was made to replace the A/D converters of Marko et al with a respective set of a plurality of A/D converters (i.e., a bank of sampler coupled to a bank of converters) clocked by a polyphase clock generator, as taught by Kost et al for the purpose of reducing power consumption and non-linearity associated with the A/D conversion of the wide bandwidth signal.

Fig.4 of Kost et al further shows filters (78,82,80,84) for the sampled signals.

Marko et al further shows a processor (310) for transforming the filtered complex signals into the channelized digital output signals.

Claims 3 and 4.

It is quite established that the plurality of filters in the polyphase filter band are either finite or infinite impulse response filters, as admitted by applicant. See the specification at page 27, line 24 - page 28, line 13.

Allowable Subject Matter

3. Claims 2,5,6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims 7-9 are allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Kevin Kim', is positioned above the printed name.

**KEVIN KIM
PATENT EXAMINER**